

DEVELOPMENTAL BIOLOGY

June 25-30

Barbara Meyer, Co-chair

Matthew Scott, Co-chair

26 June. Cell Motor Cycles. D. Beach, G. Garriaga, P. O'Farrell, M. Stern, E. Wieschaus. Pattern Formation. C. Shatz, S. Carroll, C. Goodman, P. Ingham, C. Tabin, L. Shapiro.

27 June. Induction. D. Kaiser, J. Gerhart, A. Grossman, R. Harland, D. Melton, J. Priess. Developing Pathways. L. Zipursky, T. Cline, W. Driever, S. Kim, P. Sternberg.

28 June. Ligands and Receptors. K. Anderson, P. Beachy, J. Kimble, D. Kingsley. Secreted Protein Signals. B. Hogan, A. McMahon, R. Nusse, N. Perrimon, M. Teissier-Lavigne.

29 June. Cell Fates and Movements. G. Kenyon, C. Cepko, C. Doe, S. McConnell, A. Spradling. Coordination of Gene Expression. J. Rine, S. Hake, D. Hogness, M. Levine, B. Meyer.

30 June. Cell Type Specification. J. Rossant, R. Krumlauf, W. McGinnis, J. Posakony, M. Scott.

NUTRIENT CONTROL OF GENE EXPRESSION

July 2-7

Steven D. Clarke, Chair

Michael Kilberg, Vice-chair

3 July. Nutrient Regulators of Gene Expression. S. Clarke, A. Kahn, J. Strauss III, M. Kilberg, C. Martin, C. Mariash. Nutrient Regulation of Gene Expression. K. Allen, D. Thiele, R. Cousins, E. Liebold, B. Shane, A.S. Lee.

4 July. Identifying Nutrient Responsive Cis-acting Elements. H. Towle, T. Osborne, A. Goodridge, B. Levy-Wilson, C. Basilico, D.B. Jump. Tissue Specific Expression and Transgenic Models. M. Kilberg, E.A. Fisher, J. Gordon, S. Ross, H-S. Sul, K.H. Kim.

5 July. Identifying Trans-acting Proteins. J.T. Kadonaga, J. Nyborg, C. Cladaras, M. Pfahl, T. Osumi. Identifying Nutrient Regulated Trans-acting Proteins. D.B. Jump, H. Towle, J.A. Cidlowski, F. Chytil, H. Sucov, M. Petkovich.

6 July. Transcript Processing, Editing, and Stability: A Target for Nutrient Control. G. Mariash, L. Chan, N.O. Davidson, D. Lei, J. Harford, N. Curthoys, M.W. Hentz.

7 July. Panel Discussion: Future Research Directions and Future Conference Planning. Speakers to be determined. Translational and Post-translational Regulation of Protein Expression. S. Frost, J. Hershey, A. Hinnebusch, L.J. Jefferson, A.M. Sinensky, R. Simoni.

NEUROFIBROMATOSIS

July 9-14

Nancy Ratner, Chair

Bernd R. Seizinger, Vice-chair

Francis S. Collins, Vice-chair

10 July. NF1 and NF2 Phenotypes. B. Korf, S. Huson, M. Denckla, G. Evans, R. Sobel, K. North, J. Carey. Biology of Human Schwann Cells. R. Bunge, M. Bunge, G. Tenckoon, J. Griffith.

11 July. NF2: Gene Structure and Mutations. B. Seizinger, J. Gusella, G. Rouleau, G. Thomas. Cell Biology of Merlin. J. Gusella, A. Bretscher, S. Tsukita.

12 July. NF1: Gene Structure and Mutational Analysis. F. Collins, K. Stephens, M. Wallace, M. Upadhyaya. Animal Models of NF1. T. Jacks, A. Bernards, N. Copeland, M. Schmale.

13 July. Cell Biology of Neurofibromin I. N. Ratner, D. Bar-Sagi, A. Silva, D. Lowy. Cell Biology of Neurofibromin II. F. McCormick, G. Bollag, K. Shannon, R. Ballester.

14 July. Therapeutic Approaches to Neurofibromatosis. B. Martuza, J. Gibbs, J. Downward, B. Monia, H. Saya.

SORTING AND INTRACELLULAR TRANSPORT OF RNA

July 16-21

Oswald Steward, Co-chair

Robert Singer, Co-chair

17 July. Role of mRNA Sorting in the Establishment of Axial Organization in the Embryo. M.L. King, K. Mowry, D. Albertini, A. Allworth, H. Lipshitz. Mechanisms Underlying the Sorting of Maternal mRNAs. P.M. MacDonald, R. Lehmann, D. St. Johnston.

18 July. Sorting of mRNAs for Cytoskeletal Proteins. R. Singer, E. Kislauskis, A. Fulton, M. Hill. Nucleocytoplasmic Transport of RNA. D. Ish-Horowicz. RNA Sorting and the Construction of the Myelin Sheath. J. Carson, A. Campagnoni, D. Colman.

19 July. RNA Sorting in Neurons: Local Synthesis of Synaptic Proteins. O. Steward, B. Banker, P.T. Kelly, H. Potter, J. Eberwine. RNA Sorting in Neurons: mRNA for Cytoskeletal Proteins. A. Matus, K. Kosik, G. Bassell, I. Ginzburg.

20 July. RNA Sorting in Muscle Cells. A. Fulton, J. Merlie, B. Russell, E. Ralston. Junior Scientist Session. Speakers selected from submitted abstracts. Data Blitz. Mini-presentations from participants.

21 July. mRNA/Cytoskeletal Interactions. K. Superant, J. Pachter, T. Ross.

**YEAST CHROMOSOME STRUCTURE,
REPLICATION AND SEGREGATION**
July 23-28

Molly Fitzgerald-Hayes, Chair
Shirleen Roeder, Vice-chair
Bonny Brewer, Vice-chair

23 July. Keynote Speaker. J.A. Carbon.

24 July. Chromosome Structure and Nuclear Architecture. S. Gasser, L. Davis, W. Gerrard, M. Grunstein, J. Sogo. DNA Replication. C. Newlon, B. Stillman, S. Eisenberg, B-K. Tye, W. Fangman.

25 July. DNA Replication and Cell Cycle Control. L. Johnston, J. Campbell, B. Andrews, J. Diffley, R. Sclafani. Yeast Genome Project Workshop. M. Olson, D. Botstein. L. Riles, M. Johnston, B. Dujon. Telomeres and Position Effects. V. Zakian, D. Gottschling, V. Lundblad, J. Rine, A. Lustig.

26 July. Cis- and Trans-acting Factors Affecting Chromosome Segregation. D. Koshland, M. Fitzgerald-Hayes, L. Clarke, P. Hieter, M. Calos. Molecular Motors. M. Rose, T. Huffaker, A. Hoyt, M. Snyder, P. Sorger.

27 July. Meiotic Chromosome Segregation. G. Simchen, S. Roeder, N. Kleckner, D. Kaback, B. Byers. Mitotic Apparatus. J. Kilmartin, Z. Cande, M. Winey, T. Davis, J.R. McIntosh.

28 July. DNA Damage Control and Cell Cycle Checkpoints. T. Weinert, A. Murray, R. Rowley, C. Holm, B. Futcher.

**TRANSCRIPTIONAL REGULATION
DURING CELL GROWTH, DIFFERENTIATION AND DEVELOPMENT**
August 13-18

Danny Reinberg, Chair
Robert Eisenmann, Vice-chair

14 August. Transcription Mechanisms. D. Reinberg, S. Hahn, F. Pugh, J. Kadonaga. Transcription Activation. R.G. Roeder, M. Green, L. Guarante, K. Struhl.

15 August. Transcription During Cell Cycle. J. Nevins, E. Harlow, T. Hunter, C. Sherr. Nuclear Oncogenes. R. Eisenman, S. Ness, T. Curran, C. Prives.

16 August. Tissue Specific Transcription. D. Baltimore, H. Weintraub, H. Blau, R. Bravo. Transcription and Hormones. G. Rosenfeld, R. Evans, K. Yamamoto, L. Gudas.

17 August. Signaling Systems. J. Goldstein, B. Wold, M. Roussel, T. Taniguchi. Development. M. Levine, B. Spiegelman, L. Parada, K. Chada.

18 August. Protein Structure. P. Sigler, R. Klevit, S.K. Burley, S.C. Harrison.

TENTATIVE LISTING OF THE 1995 FASEB SUMMER RESEARCH CONFERENCES

Renal Hemodynamics: Vascular Biology of the Renal Circulation. Chairs: Gerald F. DiBona, Univ. of Iowa, John Hall, Univ. of Mississippi Med. Ctr., Christine Baylis, West Virginia Univ. and Hartmut Kirchheim, Univ. of Heidelberg.

Phospholipases. Chairs: Mary F. Roberts, Boston Col. and Sue Goo Rhee, NHLBI/NIH.

Antioxidant Nutrients in Cellular Biology of Health and Disease. Chairs: Allen Taylor, Tufts Univ., Norman I. Krinsky, Tufts Univ. Sch. of Med. and Lester Packer, Univ. of California, Berkeley.

New Functions of Thrombin. Chairs: Daniel Walz, Wayne State Univ. and Lawrence J. Berliner, Ohio State Univ.

Cellular and Molecular Basis of Gastroduodenal Mucosal Defense. Chairs: John L. Wallace, Univ. of Calgary and D. Neil Granger, Louisiana State University Med. Ctr.

Genetic and Behavioral Influences on Nutrient Metabolism and Obesity. Chairs: James O. Hill, Univ. of Colorado HSC, Susan K. Fried, Rockefeller Univ., Anthony Scafani, Brooklyn Col. of CUNY and L. Arthur Campfield, Hoffmann-La Roche Inc.

Micronutrients: Trace Elements. Chairs: Roger A. Sunde, Univ. of Missouri, Columbia and K. Michael Hambidge, Univ. of Colorado.

Drugs of Abuse-Psychostimulants: Tools for Study, Craving Addiction and Treatment. Chairs: John D. Lane, Texas Col. of Osteopathic Med. and James E. Smith, Bowman-Gray Sch. of Med.

Ciliate Molecular Biology. Chairs: Carol Greider, Cold Spring Harbor Lab. and Jim Forney, Purdue Univ.

Autoimmunity. Chairs: Brian Kotzin, Natl. Jewish Ctr. for Immunology and Respiratory Med. and Gary Fathman, Stanford Univ. Sch. of Med.

Ubiquitin and Intracellular Protein Degradation. Chairs: J. Fred Dice, Tufts Univ. and Arthur Haas, Med. Col. of Wisconsin.

Ras Superfamily of GTPases. Chairs: Ian Macara, Univ. of Vermont and Dafne Bar-Sagi, Cold Spring Harbor Lab.

Prokaryotic Transcription Initiation. Chairs: Richard L. Gourse, Univ. of Wisconsin, Madison, Susan Garges, NIH and Miriam Susskind, Univ. of Southern California.

Biology and Chemistry of Vision. Chairs: James B. Hurley, Univ. of Washington and Dean Bok, Jules Stein Eye Inst., Univ. of California, Los Angeles.

Gastrointestinal Tract VI: Cell and Molecular Biology Approaches. Chairs: Mark Donowitz, Johns Hopkins Univ. Sch. of Med. and Jeffrey I. Gordon, Washington Univ. Sch. of Med.

Protein Phosphorylation. Chairs: Susan S. Taylor, Univ. of California, San Diego and Anthony J. Pawson, Mount Sinai Hosp. Res. Inst., Toronto.

Genetic Recombination and Genome Rearrangements. Chairs: Howard Nash, NIMH/NIH and James Haber, Brandeis Univ.

Cytokines and Lipid Mediators in Cell Function. Chairs: Charles Serhan, Harvard Med. Sch. and Christina C. Leslie, Natl. Jewish Ctr. for Immunology and Respiratory Med.

Biochemistry of S-Adenosylmethionine and Methylation of Macromolecules. Chairs: Peter A. Jones, Univ. of Southern California and Steven G. Clarke, Univ. of California, Los Angeles.

Recent Advances in Glucose Transporter Biology. Chairs: Mike Mueckler, Washington Univ. Med. Sch. and Morris Birnbaum, Harvard Med. Sch.

Chromatin and Transcription. Chairs: James T. Kadonaga, Univ. of California, San Diego and Sharon Y. Roth, Univ. of Texas M.D. Anderson Cancer Ctr.

Covalent Modification of Protein by Lipids. Chairs: Anant K. Menon, Univ. of Wisconsin, Madison and Patrick J. Casey, Duke Univ. Med. Ctr.

Hematopoietic Neoplasms: Altered State of Transcriptional Regulation. Chairs: Albert B. Deisleroth, M.D. Anderson Cancer Ctr. and Lalitha Nagarajan, M.D. Anderson Cancer Ctr.

DO NOT BE DISAPPOINTED.
SEND IN YOUR APPLICATION NOW.
SPACE AT CONFERENCE SITES IS LIMITED.

1994 FASEB SUMMER RESEARCH CONFERENCES

SAXTONS RIVER, VERMONT, COPPER MOUNTAIN, COLORADO, AND SANTA CRUZ, CALIFORNIA

For further information call:

Vermont Conferences —
(301) 530-7094
Colorado Conferences —
(301) 530-7093
California Conferences —
(301) 530-7095

APPLICATION FORM

(Please Type or Print)

Application Must be Submitted at Least
6 Weeks Before
Beginning of Conference

Please remit this application form
in duplicate to:

FASEB Summer Conferences
9650 Rockville Pike
Bethesda, MD 20814-3998
FAX: 301-571-0650

Invited Speakers do *not* submit an Application

Conference on _____ Conf. Date _____
Name _____ Phone _____
Dept. _____ FAX _____
Organization _____
Address _____
City _____ State _____ Zip _____

NOTICE: Please enclose a list of research activities and/or brief CV. *The application and additional materials will be forwarded to the appropriate chairperson for review and selection.* If accepted, you will receive a registration card and additional meeting information. *The registration card must be returned with full payment at least 4 weeks before the conference begins.*

Would you like to present a poster? _____ If yes, enclose a brief abstract (no special form is required). Notification of poster acceptance will accompany registration materials.

CONFERENCE FEES FOR 1994

Room assignments are based on availability

Scientists:	Vermont	Copper Mountain	Santa Cruz
On-site accommodations (includes registration, room, meals)			
Single Occupancy (1 paid registrant per unit)	\$490	\$565	\$600
Double Occupancy (2 paid registrants per unit)	\$430	\$505	\$525
Multiple Occupancy (3-5 paid registrants per unit)	—	\$465	—
Off-site accommodations (registration and meals only)	\$380	\$415	\$380
Off-site participants are responsible for paying their own housing costs.			

Spouse/Guest:

If your spouse/guest will attend the Conference, the on-site fee is \$360.00. This includes shared accommodations and meals. Spouse/guest registration does not permit attendance at the scientific sessions.

Continuing Medical Education Credits

\$25

(Fee must be paid at the time the CME form is submitted. As many as 30 Category I Continuing Medical Education credits may be provided)

Each Conferee agrees to abide by the following regulations when accepting a registration:

- Lectures and discussions may not be recorded
- Slide material may not be photographed
- Conference papers and discussions may not be used without expressed, written consent of the contributor
- FASEB Summer Research Conferences may not be cited as references in publications
- Spouses/guests are not permitted to attend lectures and discussions
- In order to maintain the intimate scientific interaction among the participants attending the conference, children under the age of 12 cannot be housed in conference housing or have meals in conference dining rooms.

SIGNATURE _____ DATE _____

Please submit your application early.
Receipt of this application will not be acknowledged prior to notification of acceptance unless a stamped, self-addressed postcard is enclosed.

DO NOT SEND PAYMENT WITH THIS APPLICATION.



Summer Research Conferences
9650 Rockville Pike
Bethesda, MD 20814-3998, USA

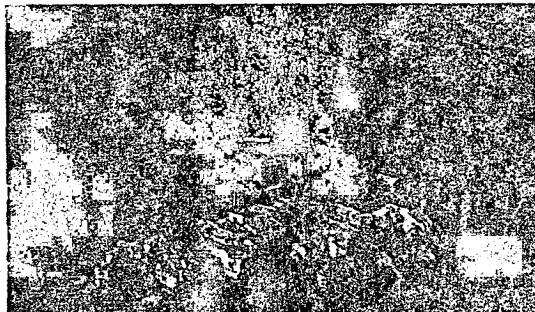
FASEB SUMMER RESEARCH CONFERENCES

June - August 1994

Saxtons River, Vermont

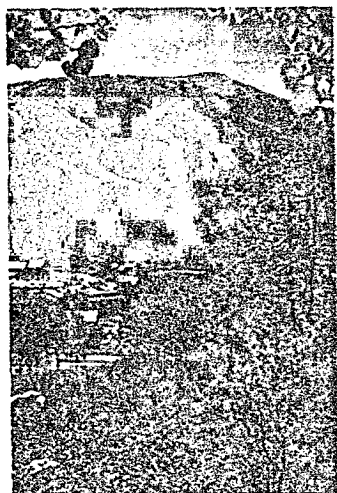


Santa Cruz, California



University California - Santa Cruz
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Aerial view

Copper Mountain, Colorado



General Information
and Application

Conference Programs
and Schedule

FASEB 1994 SUMMER RESEARCH CONFERENCES

In 1994, the Federation will host its Summer Research Conferences at the Vermont Academy in Saxtons River, Vermont, Copper Mountain, Colorado and Santa Cruz, California. The thirteenth year of conferences will schedule a total of 26 topics. The continued expansion of the series has been encouraged by the considerable success of previous years. More than 20,000 scientists from all over the world have attended these conferences in experimental biology.

The Federation Board has recognized the need for experimental biologists to meet intimately and explore new approaches to current research areas of intense scientific development. To ensure excellence, the topics have been selected by a scientific advisory committee. Every effort has been made to avoid duplication of other conferences. Emphasis will be on the cutting edge of research, with prominent scientists in each field making presentations to attendees who themselves are heavily engaged in research or are in ancillary fields where an accurate understanding of allied scientific advances is important. Post-doctoral students and senior pre-doctoral candidates are also encouraged to participate in the conferences. Attendees will be selected by the chairpersons on the basis of their probable contributions to science. Communication among leaders in each field will

open avenues of further research to find solutions to crucial problems that must be addressed.

The three locations selected for the 1994 Conference series are appropriate for undisturbed discussions. Although the administration of the scientific program will be identical for all sites, housing accommodations are somewhat different.

The conferences are scheduled June-August, with the scientific sessions programmed for mornings and evenings. This year, the conferences being held in Vermont and California will begin on Saturday and end on Thursday at 11:30 am, with the exception of the Principles in Viral, Bacterial and Protozoan Pathogenesis conference in Vermont which will start on Sunday and end on Friday at 11:30 am. The conferences being held in Copper Mountain will begin on Sunday and end on Friday at 11:30 am. The afternoons are used for informal discussions among participants, occasional workshops and/or poster sessions, or for recreational activities. To improve the communication and reduce the formality, FASEB will prohibit recording the lectures, taking photographs during the presentations, or using data obtained at the conference without the expressed written consent of the contributor.

HOUSING

At Vermont Academy, dormitory rooms for one or two persons will be used and bathroom facilities will be shared. In Copper Mountain, rooms (with baths) housing one, two, or three-five persons will be used. Univ. of California accommodations consist of apartments containing three bedrooms and two baths, with one or two persons per bedroom.

Should you request a double or multiple room, you will be sharing a room with another participant or your Spouse/Guest whose registration has been paid. *Spouses or guests may not attend the conference without prior registration and payment of fees.*

1994 CONFERENCE SCHEDULE

Vermont	California		Colorado
June 4-9	Protein Folding and Assembly in the Cell	June 12-17	Retinoids
June 11-16	Neural Mechanisms in Cardiovascular Regulation	June 19-24	Smooth Muscle
June 19-24	Principles in Viral, Bacterial and Protozoan Pathogenesis	June 26-July 1	Endothelium and Cardiovascular Control
June 25-30	Biology, Chemistry and Modeling of Vision: Visual Processing	July 3-7	Interactions of the Nervous and Immune Systems: Peptides, Neurotransmitters, Cytokines, Adhesion Molecules and their Receptors
July 2-7	Calcium and Cell Function	July 10-15	Receptors and Signal Transduction
July 9-14	Repair and Regeneration: At the Interface	July 17-22	Protein Phosphatases
July 16-21	Membrane Molecular Biophysics: Structure and Dynamics	July 24-29	Physiology and Pathophysiology of the Splanchnic Circulation
July 23-28	Virus Assembly	July 31-Aug. 5	Folic Acid, Vitamin B12 and One Carbon Metabolism
July 30-Aug. 4	Intestinal Lipid Absorption, Metabolism and Transport	Aug. 7-12	Hepatic Regeneration and Carcinogenesis: Molecular and Cellular Pathways
Aug. 6-11	Plant Development and Cell Biology	Aug. 14-19	Molecular Genetic Basis of Cell and Tissue Structure and Function
Aug. 13-18			
	Developmental Biology		
	Nutrient Control of Gene Expression		
	Neurofibromatosis		
	Sorting and Intracellular Transport of RNA		
	Yeast Chromosome Structure, Replication and Segregation		
	Transcriptional Regulation During Cell Growth, Differentiation and Development		

REGISTRATION AND RESERVATIONS

Attendance at each conference will be limited to approximately 155 participants and will be by invitation upon application. The final deadline for receipt of applications for review and approval by the chairperson is at least 6 weeks before the conference begins. Because of space limitations, the application should be returned immediately. The application form may be found inside the back cover of this booklet and may be xeroxed. A waiting list will be established for those conferences that are oversubscribed and participants will be

notified as space becomes available. Invited speakers do not have to submit an application.

A fixed fee is charged each registrant regardless of the amount of time the individual spends at the conference. The on-site fee covers registration, room and meals. Any additional expenses such as laundry, telephone, etc., are paid by the attendee. The off-site fee covers registration and meals only. Off-site housing costs are the responsibility of the participants.

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Continuing Medical Education Credits \$25
(Fee must be paid at the time the CME form is submitted)

As many as 30 Category I Continuing Medical Education Credits may be provided to eligible attendees upon request.

Chairpersons have some limited funds available to assist in defraying part of the expenses of invited speakers and some participants who might not otherwise be able to attend. However, applicants should be prepared to pay their week's fee at the time they return the registration cards after being notified of their acceptance. If any of the fee is to be defrayed at the expense of the conference, FASEB will have been notified by the chairperson. *Applicants selected to participate will be mailed a registration card that must be completed and returned with advance payment to the FASEB Summer Conference Office at least 4 weeks before the conference begins.* The full fixed fee is required of

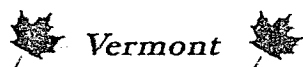
all participants in advance to ensure attendance and accommodations. Registration cards not accompanied by the advance payment will not be accepted. Spouses/guests are charged for room and meals as indicated on the conference fee schedule. Spouses/guests will not be permitted to attend the conference lectures or discussion groups. Pets are not allowed at the conference site.

In order to maintain the intimate scientific interaction among the participants attending the conference, children under the age of 12 cannot be housed in conference housing or have meals in conference dining rooms.

CANCELLATION POLICY

Requests for refund of the registration fee must be made in writing two weeks before the conference begins. A \$50.00 processing fee will be deducted from the registration refund. There will be no refund if the cancellation is made after the two week deadline.

PROGRAM FOR 1994



PROTEIN FOLDING AND ASSEMBLY IN THE CELL

June 4-9

Ulrich Hartl, Chair

Thomas Baldwin, Vice-chair

5 June. Folding of Model Proteins. T. Creighton, S. Radford, D. Agard, T. Baldwin. Protein Folding and Translation. M. Goldberg, W. Welch, E. Craig.

6 June. Theoretical Aspects of Protein Folding. D. Eisenberg, P. Wright, N. Pace. Cellular Components in Protein Folding I. L. Gierasch, G. Lorimer, H. Saibil, U. Hartl.

7 June. Protein Folding Studied *in vivo*. A. Horwich, J. King, B. Bukau. Cellular Components in Protein Folding II. C. Georgopoulos, R. Freedman, A. Gatenby.

8 June. Protein Transport and Folding/Assembly. M. J. Gething, W. Neupert, B. Wickner, L. Randall. Protein Folding and Disease. A. Helenius, S. Pruisner, S. Goff, J. Kelly.

9 June. Protein Misfolding and Degradation. J. King, J. Buchner, A. Goldberg, W. Baumeister.

NEURAL MECHANISMS IN CARDIOVASCULAR REGULATION

June 11-16

Donald J. Reis, Chair

Diana L. Kunze, Vice-chair

12 June. Molecular Biology of Receptors Related to Cardiovascular Function. K. Lynch, E. Clauser, J. Linden, S. Lolait, C. Wahlestedt. Neuroendothelial Interactions. A. Cowley, D.S. Bredt, L. Ignarro, A. Lee, T. Michel, J. Stammler, N. Todo.

13 June. Cell Biology of Arterial and Central Chemoreceptors. D. Kunze, S. Fidone, M-K. Sun, C. Nurse, J. Neubauer. Integration within Autonomic Ganglia. W.C. deGroat, D. Kreulen, R. Wurster, R. Zigmond.

14 June. Development of the Autonomic Nervous System. M. Gershon, D. Anderson, M. Bronner-Fraser, S.C. Landis, D. Katz. Neural Pathways in Central Cardiovascular Integration. L. Swanson, A. Watts, D. Ruggiero, D. Cechetto.

15 June. What's New in the Nucleus Tractus Solitarius? M. Andresen, S. Mifflin, R. Bradley, J. Schild. Central Processing of Emotions Related to Cardiovascular Function. J.E. LeDoux, F. Helmstetter, G. Bernston.

16 June. The Nervous System and Cardiovascular Disease: Molecular and Pharmacological Frontiers. D.J. Reis, C. Ferrario, B. Nabel, L. Field, K. Chien.

PRINCIPLES IN VIRAL, BACTERIAL AND PROTOZOAN PATHOGENESIS

June 19-24

Michael B.A. Oldstone, Co-chair

Bernard Fields, Co-chair

Barry Bloom, Vice-chair

John Mekalanos, Vice-chair

20 June. Receptors. K. Holmes, V. Racaniello, J. Strauss, S. Harrison, L. Miller, C. Svanborg. Invasion. R. Isberg, E. Tuomanen, J. Galan, K. Joiner, S. Miller. After Dinner Lecture: Prions. C. Weissmann.

21 June. Membrane Interaction. A. Helenius, G. Nemerow, M. Nibert, R. Lamb. Trafficking. R. Compans, J. Moss, M. Neutra, J. Rose, D. Portnoy, M. So.

22 June. Host Response. N. Rose, R. Welsh, C. Nathan, I. Wilson, P. Peterson, H. Grey, D. Hunt, R. Ahmed, R. Lehrer, R. Locksley. Evasion of Host Defense. M.B.A. Oldstone, D. Griffin, B. Moss, B. Roizman, L. Gooding, T. Shenk, R. Young.

23 June. Virulence/Attenuation/Vaccines. F. Brown, S. Hoffman, B. Bloom, J.L. Whitton, S. Lory, J. Rossi. Genetic Approaches to Study of Virulence. J. Mekalanos, J. Boothroyd, B. Fields, S. Beverley.

24 June. Structure/Function of Microbes. S. Harrison, J. Hogle, J. Collier, V. Fischetti, D. Wiley.

BIOLOGY, CHEMISTRY AND MODELING OF VISION: VISUAL PROCESSING

June 25-30

Richard H. Masland, Chair

David R. Copenhagen, Vice-chair

26 June. Retinal Cell Populations. J. Dowling, E. Strettoi, D. Vaney, E. Raviola. Parallel Information Flows. D. Baylor, S. DeVries, M. Meister, R. Wong.

27 June. Novel Mechanisms of Synaptic Communication. E. Schwartz, F. Rieke, A. Stuart. Mechanisms of Lateral Conduction. G. Fain, S. Bloomfield, B. Peters, P. Cook.

28 June. Primate Color Vision I. B. Boycott, C. Curcio, G. Jacobs, E. Kaplan. Primate Color Vision II. H. Wässle, D. Calkins, D. Dacey, P. Martin.

29 June. Retina-based Hardware. J. Wyatt, K. Boahen, A. Andreou, F. Werblin. Bipolar Cell Axon Terminals. A. Kaneko, R. Marc, M. Tachibana, G. Matthews.

30 June. Control of Ganglion Cell Excitation. D. Copenhagen, A. Kaneko, J. Diamond, C. Barnstable.

CALCIUM AND CELL FUNCTION

July 2-7

Howard Schulman, Chair
Barbara Ehrlich, Vice-chair

3 July. Structure/Function of Ca^{2+} -binding Proteins. E. Carafoli, M. Ikura, D. McKay, T. Sudhof. Molecular Properties of Neuronal Ca^{2+} Channels. R.W. Tsien, T. Snutch, T. Scheuer, B. Bean.

4 July. Regulation of Intracellular Ca^{2+} . B. Ehrlich, K. Mikoshiba, R.Y. Tsien, M. Hanley. Spatial/Temporal Ca^{2+} Signals. D. Clapham, T. Meyer, N. Allbritton, D.L. Taylor.

5 July. Ca^{2+} Signaling. P. Gardner, D. Mochly-Rosen, A. Aderem, H.C. Lee. Ca^{2+} -dependent Protein Phosphorylation and Dephosphorylation. C. Klee, D. Storm, T. Soderling, J. Stull.

6 July. Ca^{2+} in Cell Cycle and Gene Expression. A.R. Means, G. Enikolopov, P. McCaffrey, K. Cunningham. Genetic Approaches to an Understanding of Ca^{2+} Action. C. Kung, C. Zuker, L. Griffith.

7 July. Ca^{2+} Signaling in Human Diseases. R. Steinhardt, M. Mattson, A. Marks, E. Brown.

REPAIR AND REGENERATION: AT THE INTERFACE

July 9-14

William Lindblad, Chair
Anita Roberts, Co-chair
Raymond Sicard, Co-chair

10 July. Regeneration and Repair: Similarities and Contrasts. N. Adzick, A. Logan, R. Sicard, S. Thorgeirsson. Stem Cell Populations in Regeneration/Repair. S. Sell, A. Caplan.

11 July. Mechanism(s) of Spatial and Temporal Patterning. D. Stocum, P. Chambon. Soluble Mediators - Growth Factors in Repair. A. Baird, G. Schultz, T. Mustoe.

12 July. Extracellular Matrix as a Cell Mediator I. H. Kleinman, H. Sage, R. Tassava. Extracellular Matrix as a Cell Mediator II. J. Jeffrey, P. Tsonis.

13 July. Tissue Specific Repair/Regeneration. A. Reddi, B. Carlson. Selected Mini-presentations. Oral presentations by individuals selected by the program organizers from submitted abstracts.

14 July. Fetal Repair. R. Diegelmann, M. Ferguson, P. Martin.

MEMBRANE MOLECULAR BIOPHYSICS: STRUCTURE AND DYNAMICS

July 16-21

David D. Thomas, Chair
John R. Silvius, Vice-chair

17 July. Membrane Lipids: Local Organization and Dynamics. D. Daleke, M. Caffrey, E. Rowe, R. Mendelsohn. Membrane Lipids: Lateral Organization. J. Silvius, T. Thompson, G. Feigenson.

18 July. Integral Proteins: Structure and Dynamics. D. Thomas, J. Staros, K. Jacobson, J. Davis. Modeling Integral Protein Structure. R. Reithmeier, B. Roux, B. Wallace.

19 July. Lipid-protein Interactions: Integral Membrane Proteins. P. Yeagle, M. McNamee, O. Mouritsen, A. Watts, R. McElhancy. Lipid-protein Interactions: Peripheral Membrane Proteins. D. Marsh, A. Newton, A. Esser.

20 July. Biophysical and Molecular Biological Approaches: Ca-ATPase. G. Inesi, L. Jones, J. Mahaney. Biophysical and Molecular Biological Approaches: Heptahelical Receptors. W. Hubbell, K. Rothschild, R. Lefkowitz, C. Altenbach, D. Orian.

21 July. Intermembrane Interactions. M. Clague, A. Walter, D. Siegel.

VIRUS ASSEMBLY

July 23-28

Patricia G. Spear, Co-chair
Sherwood R. Casjens, Co-chair
Eric Hunter, Vice-chair
Roger Hendrix, Vice-chair

24 July. Three-dimensional Structures of Virions. J. Johnson, L. Liljas, T.S. Baker, A. McPherson, R.M. Burnett. Virus Receptors and Entry into Cells. G.R. Nemerow, A.C. Steven, P.G. Spear, M. Chow, M.M.C. Lai.

25 July. Protein Folding and Processing. M. Chow, J. King, A. Kuhn, J.M. Hogle, H. Garoff, I. Deckman. Capsid Assembly in RNA Viruses. R. Rueckert, D.H. Bamford, C.D. Morrow, P. Roy, S.P. Goff.

26 July. RNA Packaging. M.L. Linial, D. Peabody, L. Mindich, H. Schaller, G.T.W. Wertz. Capsid Assembly in DNA Viruses. R.W. Hendrix, P.E. Prevelige, B. Lindqvist, R.L. Garcea, F.L. Homa.

27 July. DNA Packaging. D. Anderson, S.R. Casjens, M. Gold, M. Feiss, S. Weller. Envelope Assembly and Budding. E. Hunter, R.E. Webster, P. Model, J. Taylor, H. Goettlinger, M. Kielian.

28 July. Therapeutic Strategies. J.M. Hogle, D. Wiley, P.M. Colman, M. James, J. Erickson, F. Cohen.

INTESTINAL LIPID ABSORPTION, METABOLISM AND TRANSPORT

July 30-August 4

Patrick Tso, Chair

David Y. Hui, Vice-chair

31 July. The Action and Regulation Lipid Digestive Enzymes. H. Brockman, R. Verger, D. Hui, P.M. Brannon, M. Hamosh, E.P. DiMagno. Micellar and Non-micellar Uptake of Dietary Lipids. M. Carey, J.W. Nichols, J. Meddings.

1 August. Intracellular Transport and Metabolism of Lipids. C.M. Mansbach, J. Storch, A. Kuksis, R. Coleman, A.R. Place. Intestinal Apolipoprotein Synthesis and Metabolism. R.M. Glickman, N.O. Davidson, J.F. Field.

2 August. Dietary and Therapeutic Modification of Intestinal Lipid Absorption. A.B.R. Thomson, D. Quinn, B. Borgstrom, B.R. Krause, A.H. Merrill, R. Jandacek. New Frontiers in Intestinal Research. D.Y. Hui, J.I. Gordon.

3 August. Lipoprotein Structure, Packaging and Secretion. R. Davis, J. Wetterau, D. Puppione, R. Hamilton, T.Y. Aw. Neonatal Development of Intestinal Lipid Absorption. C.C. Roy, D.D. Black, E. Levy, D.C. Rubin, K. Crissinger.

4 August. Postprandial Lipoprotein and Apolipoprotein Metabolism. T.G. Redgrave, I. Goldberg, J.M. Dietschy, P. Tso, A.F. Hofmann, D. Kritchevsky.

PLANT DEVELOPMENT AND CELL BIOLOGY

August 6-11

Sarah Hake, Chair

Philip N. Benfey, Co-chair

Steven Briggs, Co-chair

6 August. Keynote Address: Genetic Control of Flower Development. E. Coen.

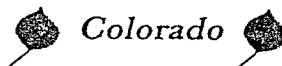
7 August. Ovules and Gametophytes. C. Gasser, P. Bedinger, J. Kermicle. Organ Initiation. I. Sussex, G. Jurgens, S. Hake.

8 August. Cell Polarity and Division. K. Roberts, R. Quatrano, V. Sundaresan. Vegetative Growth. P. Benfey, S. Poethig, D. Cosgrove, L. Smith. Techniques for Dissecting Development. P. Heslop-Harrison, R. Phillips.

9 August. Cell Differentiation. J. Croxdale, J. Schiefelbein, N. Dengler. Cell Interactions. P. Zambryski, S. Briggs, K. Okada.

10 August. Nuclear-organelle Interactions. R. Martienssen, X.W. Deng, J.A. Chory. Hormones and Development. J. Ecker, R.M. Walden, N. Harberd.

11 August. Sexual Reproduction. E. Meyerowitz, S. Dellaporta, M. Yanofsky.



RETINOIDS

June 12-17

A. Catharine Ross, Chair

Reuben Lotan, Vice-chair

12 June. Plenary Lecture. K.R. Norum.

13 June. Structure-function Relationships of Retinoid-binding Proteins. D.E. Ong, M.E. Newcomer, L.J. Banaszak, D.R. Soprano, E. Li. Nuclear Receptors. M. Pfahl, R.E. Evans, P. Chambon, K. Ozato, X-K. Zhang.

14 June. Retinoid Biology. A.C. Ross, M.H. Green, J.J. Voorhees, J.C. Saari, S.S. Shapiro. Retinoid Activation. J.A. Olson, S. Ottonello, G.L. Duester.

15 June. Hematopoiesis and Differentiation. T.R. Breitman, H. de Thé, P.G. Pelicci, S.J. Collins, L.A. Gudas. Special Lecture: Theories of Morphogenesis. L. Wolpert.

16 June. Differentiation and Development. P.J.A. Davies, J.L. Grippo, R.A. Heyman, R. Krumlauf, U.C. Dräger. Retinoids in Prevention and Treatment of Cancer. R. Lotan, P.C. Adamson, S.M. Lippman, J.A. Fontana.

17 June. Poster Discussion Session. L.M. De Luca.

SMOOTH MUSCLE

June 19-24

Casey van Breemen, Chair

Fredric S. Fay, Co-chair

20 June. Introduction. C. van Breemen. Special Features of the Cross-bridge Cycle in Smooth Muscle. A. Somlyo, D. Warshaw, K. Trybus, D. Hartshorne. Interdisciplinary Lectures: Molecular Biology, Electrophysiology, Imaging. J. Stull, M. Nelson, F. Fay. How do Membrane Depolarization and Receptor Activation Stimulate Ca^{2+} Influx? M. Nelson, T. Bolton, F. Hofmann.

21 June. What Controls Myofilament Ca^{2+} Sensitivity? J. Stull, A. Somlyo, K. Morgan, M. Walsh. Mechanisms of SR Ca^{2+} Release: Their Relative Contributions and how they Interact. G. Isenberg, M. Iino.

22 June. Morphological Basis for the Interaction among Various Ion Transporters, Enzymes and Myofilaments. F. Fay, C. van Breemen, M. Sturek, R. Paul. Mechanisms Responsible for Ca^{2+} Homeostasis and Relaxation. R. Casteels, E. Carafoli, F. Wuytack, M. Michalak.

23 June. Which Cellular Mechanisms and Intracellular Interactions are Responsible for Smooth Muscle Rhythmicity? K. Sanders, T. Tomita, R. Lang, B. Horowitz. Mechanisms Underlying Basal Vascular Tone: How are they Modulated during Autoregulation? D. Hirst, D. Harder, J. Singer.

24 June. Roles that Smooth Muscle Play in Vascular Pathology: Stimuli that Induce Smooth Muscle Proliferation and How it can be Prevented. S. Schwartz, B. Berk, M. Periasamy, G. Owens.

ENDOTHELIUM AND CARDIOVASCULAR CONTROL

June 26-July 1

R. Wayne Alexander, Chair
Louis Ignarro, Co-chair
Peter Libby, Co-chair

27 June. Nitric Oxide Synthase - Constitutive and Regulated: Molecular Characterization and Regulation. L. Ignarro, D. Harrison, T. Michel, D.J. Stuehr, P. Marsden. Non-dilator Effects of Nitric Oxide. J. Loscalzo, T. Smith.

28 June. Endothelial Leukocyte Adhesion Molecules: Mechanisms of Regulation. J. Harlan, T. Collins, R. Medford, W. Caughman, M. Labow. Cytokines in Vascular Pathophysiology. P. Libby, T. Maciag, M. Rosenfeld.

29 June. Endothelium and the Control of Vascular Growth. V. Dzau, D. Heistadt, P. DiCorleto, A. Clowes, A. Hassid. Endothelium-blood Interactions. L. Harker, J.H. Griffin, R. Rosenberg, M.S. Runge, T. Wick.

30 June. Effects of Physical Forces on Endothelial Function. R. Nerem, P. Davies, R. Taylor, L. Thibault. Signal Transduction and Metabolism in Endothelium. P. Ward, S. Parthasarathy, S.M. Prescott, B. Berk.

1 July. Endothelium and Vascular Disease. P. Ganz, C. Treasure, A. Fogelman, J. Cook, T. Luscher.

RECEPTORS AND SIGNAL TRANSDUCTION

July 10-15

William T. Schrader, Chair
Joseph Schlessinger, Co-chair

11 July. Plenary Session: The Role of Phosphorylation in Memory. R. Davis. Protein Kinase A. J. Scott. Insulin. S. Taylor.

12 July. Second Messenger Coupling. A. Means. Tyrosine Kinases. M. Barbacid.

13 July. Nuclear Receptors. M. Parker. Receptors of the Immune System. R. Klausner.

14 July. Receptors of the CNS. M. Birnbaumer. Growth Factors and Oncogenes. H. Lodish.

15 July. To Be Determined.

INTERACTIONS OF THE NERVOUS AND IMMUNE SYSTEMS: PEPTIDES, NEUROTRANSMITTERS, CYTOKINES, ADHESION MOLECULES AND THEIR RECEPTORS

July 3-7

Jean E. Merrill, Chair
G. Miller Jonakait, Vice-chair

3 July. Neuroimmunology. A. Fontana.

4 July. Adhesion Molecules. J. Merrill, J. Salzer, D. Colman, M. Filbin, M. Schachner, G. Tennekoon. Neurotoxicity I. C. Pert, G. Grau, V.L. Dawson, J. Merrill, N. Ruddle, S. Lipton. Neurotoxicity II. G.M. Jonakait, C. Pert, R. Rydel.

5 July. Cytokine Regulation of Development and/or Regeneration. J. Salzer, J. Kessler, G.M. Jonakait, L. Banner, D. Brenneman, M. Schwartz. Cytokine-Neuropeptide Interactions. D. Brenneman, D. Ganea, C. Evans, J. Schwartz, S. Murphy, E. Goetzl. Psychoneuroimmunology. E. DeSouza, M. Kemeny, D. Spiegel.

6 July. Cytokine/Neurotrophic Factor Interactions. J. Schwartz, D. Bredesen, U. Otten, D.P. Gearing, C. Carlson, N. Ip.

7 July. Regulation of IL-1 Receptor Expression in the Nervous System. U. Otten, S. Dower, R.P. Hart, E. DeSouza, A. Arimura, N. Rothwell, F. Haour.

PROTEIN PHOSPHATASES

July 17-22

David L. Brautigan, Chair
Marc Mumby, Vice-chair

18 July. Special Lectures: Phosphatase 3D Structures. M.A. Saper, D. Barford. Cell Surface Phosphatases - Receiving and Sending Signals. N. Tonks, K. Zinn, C. Pallen, M. Streuli. Phosphorylation of Protein Phosphatases. S. Shenolikar, J. Chen, Z. Damuni, N. Tonks.

19 July. Intracellular Targeting of Phosphatases. J. Dixon, K. Kelly, B. Neel, M. Mumby. Phosphatases in Growth and Development. A. DePaoli-Roach, P.T.W. Cohen, B. Hemmings, R.A. Firtel.

20 July. Phosphatases in Hematopoietic Cells. B. Neel, M.L. Thomas, A. Rao, L. Shultz. Phosphatase Inhibitors and Activators. M. Cyert, C. Holmes, Y. Hannun, J. Cannon.

21 July. Cell Cycle Regulation: In and Out of Mitosis. N. Lamb, P. Russell, J. Maller. Keynote Lecture: Signal Transduction Involving Protein Tyrosine Phosphorylation. N. Perrimon.

22 July. Phosphatases from Different Places. W. Stalmans, M. Cyert, D. Levin, P. Kennelly, H. Saito.

PHYSIOLOGY AND PATHOPHYSIOLOGY OF THE SPLANCHNIC CIRCULATION

July 24-29

Peter R. Kvietys, Chair

Gregory B. Bulkley, Vice-chair

25 July. Non-adrenergic, Non-cholinergic Regulation of Gastrointestinal Circulation. E.D. Jacobson, C. Sternini, J.E. Brayden, J.J. Galligan, D.L. Kreulen, S. Vanner. Imaging Technology for Study of the Vascular System. G.A. Meininger, E.L. Ritman, D.C. Zawelja, P.F. Davics, E.D.W. Moore.

26 July. Endothelial Cell Biology. H.J. Granger, W. Smith, L.V. McIntire, D. Shasby, Y. Yuan, P.R. Kvietys. Modulation of Gastrointestinal Inflammation: Leukocyte Adhesion and Chemotaxis. J. McCord, D.C. Anderson, P. Kubes, S.C. Silverstein, J.L. Wallace.

27 July. Ischemia/Reperfusion and Tissue Injury. A.E. Taylor, J.E. Repine, R.J. Korthuis, M.V. Cohen, D.L. Osborne, K.G. Proctor. Systemic Toxins of Gut Origin. C.C. Chou, U. Haglund, M.P. Fink, H.P. Hechtman, E.A. Deitch, D.A. Parks.

28 July. Nitric Oxide and the Splanchnic Circulation. P. Kubes, P.J. Kadowitz, B.J.R. Whittle, A.M. Lefer, H.J. Granger, M. Grisham. Modulators of Endothelial Cell Function. A.P. Shepherd, T. McIntyre, B.N. Cronstein, M. Tsuchiya, H.A. Lehr.

29 July. Novel Mechanisms of Tissue Injury. G. Bulkley, R.S. McCuskey, C.A. Brass, T.G. Buchman, A.S. Klein.

FOLIC ACID, VITAMIN B₁₂ AND ONE CARBON METABOLISM

July 31-August 5

Robert H. Allen, Chair

Barry Shane, Co-chair

1 August. B₁₂ and Folate Enzymes and the Regulation of Methionine Synthesis. R. Matthews, R. Rosen, R. Banerjee, J. Stubbe. Folate Enzymes and the Metabolic Control of One Carbon Metabolism. B. Shane, V. Schirch, G. Stauffer, H. Zalkin, D. Appling.

2 August. Clinical Aspects of B₁₂ and Folate Deficiency. R.H. Allen, W. Fenton, I. Rosenberg, D. Weir, J. Lindenbaum, F. Ledley. S-Adenosylmethionine and Methylation. C. Wagner, A. Pegg, C. Bacchi, P. Jones, S.G. Clarke.

3 August. Emerging Chemotherapeutic Targets for Cancer. C. Allegre, R. Schimke, E. Chu, Y. Assaraf, D. Goldman. Folate and Vitamin B₁₂ Biosynthesis. J. Roth, B. Nichols, I. Scott, L. Debussche.

4 August. Homocysteine and Vascular Disease. H. Refsum, P. Ueland, I. Graham, R.H. Allen, J. Ubbink. Emerging Chemotherapeutic Targets Involving Mammalian and Nonmammalian Organisms. D. Santi, R. Stroud, B. Shane, J. Galivan.

5 August. Binding and Transport of Folate and B₁₂. F. Huennkens, C. Bradbeer, S.P. Rothenberg, F. Sirotinak, P. Elwood.

HEPATIC REGENERATION AND CARCINOGENESIS: MOLECULAR AND CELLULAR PATHWAYS

August 7-12

George Michalopoulos, Chair

Randy L. Jirtle, Vice-chair

8 August. Cytokines Related to Regulation of Normal and Neoplastic Liver. G.K. Michalopoulos, K. Fujiwara, R. Schwall, P. Comoglio, N. Fausto, R. Zarnegar, W. Russel, D. LaBrecque.

9 August. Mito-inhibitory Cytokines in Regeneration and Neoplasia. R.L. Jirtle, S. Thorgeirsson, H. Isom, J. Yager. Transcription Factors in Hepatic Growth and Differentiation. J. Locker, K. Zaret, R. Taub.

10 August. Stem Cells and Transitional Cells. S. Thorgeirsson, D. Shafritz, K. Ponder. Non-genotoxic Carcinogenesis. J. Reddy, D.S.R. Sarma, W. Kaufmann. Genetic and Non-genetic Alterations in Tumor Progression. N. Drinkwater, C. Rogler.

11 August. Inflammatory Cytokines and Biology of Liver Transplantation and Growth. T. Starzl, T. Francavilla, A. Demetriou, A.M. Diehl. Human Liver Carcinogenesis. B. Carr, S. Strom.

12 August. Intercellular Matrix, Ito Cells and Bile Duct Cells. A. Sirica, A. Martinez-Hernandez, N. Bucher, J. Demetris, M. Rojkind.

MOLECULAR GENETIC BASIS OF CELL AND TISSUE STRUCTURE AND FUNCTION

August 14-19

Gary Stein, Chair

Alice Fulton, Vice-chair

Ronald Berezney, Vice-chair

15 August. Cellular and Molecular Basis of Organogenesis and Tissue Remodeling. S. Penman, H. Reddi, E. Bell, H.M. Blau. Involvement of Nuclear Architecture in Transcriptional and Post-transcriptional Control of Gene Expression. J. Lawrence, W. Brinkley, D. Spector, R. van Driel, A. van Wijnen, J. Nickerson.

16 August. Role of Chromatin Structure and Nucleosome Organization in Transcriptional Control. G. Hager, M. Bradbury, M. Montecino, J.R. Davie, W. Garrard, S. Ward, H. Saucressig, S. Spiker. Involvement of the Nuclear Matrix in DNA Replication. R. Berezney, J. Hamlin, P. Reddy, D. Kaufman, D. Jackson, T. Kohwi-Shigematsu.

17 August. Contributions of the Cytoskeleton to Control of Gene Expression. A. Fulton, R. Singer, R. Goldman, D. Cleveland, E. Luna. Regulation and Regulatory Roles of the Extracellular Matrix. M.J. Bissell, L. Suva, M. Bernfield, H. Sage, P. Bornstein, S. Farmer, J. Lian.

18 August. Proliferation-differentiation Interrelationships: Regulation of Gene Expression Supporting Cell Growth and Tissue-specific Gene Expression. G. Stein, T. Spelsberg, D. Denhardt, K. Korach, J. Bode. Mechanochemical Signalling Mechanisms Supporting Cell and Tissue-specific Gene Expression. D. Ingber, M. Sinensky, C. Rubin, K. Hruska, W.B. Kinlaw, J. Bidwell.

19 August. Modifications in Cell Structure as a Basis for Diagnosis, Prognosis and Therapeutics. D.S. Coffey, A. Ben-Zeev, R. Hoffman, R. Getzenberg, K. Pienta, E.G. Fey, D. Fernandes, D. Bronstein.